



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/506,204 02/17/00 DOAN

T 3025.1US (95)

EXAMINER

MM91/0731

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QUACH, T

ART UNIT

PAPER NUMBER

2814

DATE MAILED:

07/31/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/506,204

Applicant(s)

DOAN, TRUNG T.

Examiner

Tuan Quach

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

Art Unit: 2814

DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran et al. taken with Kobayashi et al.

Saran et al. show the aluminum contact in contact holes in an insulating layer. See Figs 1B and 2B, column 2 line 2 to column 3 line 20. Note that for product-by-process claims, it is the patentability of the product claims which must be determined. Thus Saran et al. lacks the recitation of the advantages of inclusion of the alloy, the recitation of the homogeneous alloy, and the various alloying elements.

Kobayashi et al. teach the use of electrode containing Al as the primary component and the inclusion of additional component where formation of homogeneous Al alloy, e.g., Cu, Mg, Zn, Ag, Ni is also taught. The advantage of improved heat resistance and the prevention of metal diffusion into the semiconductor material is also delineated. See column 1 line 10 to column 3 line 42, column 4 lines 31-63.

It would have been obvious to one skilled in the art at the time the invention was made in practicing the Saran et al. invention to have included the aluminum material a desired alloy as taught by Kobayashi et al. wherein homogeneous aluminum alloys can be obtained. Any alternative alloy materials not recited otherwise would have been obvious or alternatively, official notice is given regarding such use to obtain the desired

Art Unit: 2814

alloy having improved heat resistance and reduced diffusion given the teachings of the references as delineated.

Regarding the recitation concerning "void-free" feature in the preamble of claim 1, line 1, or in claim 23 last line claim 39 last line, to the extent such recitation could be argued to impart any patentability to the claims, such would have been met or otherwise obvious, absent evidence to the contrary, as shown in Saran et al., Figs. 1B and 2B, column 2 line 2 to column 3 line 20.

The non-deformed aluminum bridge is clearly met by Saran et al. as shown in Fig. 2B wherein no deformation is shown. In addition, such is met as shown in Saran et al., column 1 line 50 to column 2 line 3. The direct contact would have been obvious given that barrier while may be included is not required, e.g., Saran et al., column 3 line 8-10.

Applicant's arguments with respect to claims 1-44 have been considered but are moot in view of the new ground(s) of rejection. Note that the rejection based on Dixit et al. has been withdrawn and see additional grounds regarding the newly added limitations and delineated in Saran et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Quach whose telephone number is 703-308-1096. The examiner can normally be reached on M-F from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Application/Control Number: 09/506,204

Page 4

Art Unit: 2814

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Tuan Quach
Primary Examiner